

AN EXAMPLE OF VIRTUOUS CIRCLE BETWEEN THE EXPLOITATION OF BOXWOOD AND AN ORGANIC HOG FARM

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Introduction

EARL Terres Libres is an outdoor organic hog farm in the Southern Larzac, a karstic region of the South of France, at 500 to 800 m above sea level. The domain is 250 ha including 215ha of Mediterranean forest. The main species of big trees are holm oak (*Quercus ilex*) and downy oak (*Quercus pubescens*). All these old trees are today invaded by box tree bushes (*Buxus sempervirens*). This is the result of the diminution of agro-pastoralism since the second half of the twentieth century. Without maintenance of the forest, bushes are so much dense that animals cannot penetrate inside. For the future of the farm, it is necessary to thin the forest and create pasture area for livestock.

Material and methods

The forest thinning requires a mechanical clearing of the undergrowth. Therefore we designed and built a machine allowing cutting and chipping the undergrowth. In single intervention:

- the machine cuts the bushes, shrubs and low branches of trees by means of a special hydraulic shears, without damaging the soil and the root system. The light can reach the forest soil, which favors the generation of new edible plants for hogs. With the forest opening, pigs can enjoy again grass, acorns and other resources. Selective pruning preserves the high quality trees and reduces the risk of forest fires. It is important to understand that, in this particular context, high quality trees are not preserved to produce high quality timbers but to improve the forest conditions: shadow, humidity, reconstruction of the humus.
- the machine chips immediately the brushwood, by means of a particular chipper, called 'Jean Pain' chipper, which is attached to the harvest machine (and that can even be radio guided in the new prototype),
- the machine collects the boxwood chips in a trailer.



Figure 1: The new machine for cutting and chipping the undergrowth



Figure 2: Other views of the machines

Thus a company of agroforestry, called BUXOR SAS, was created to carry out the harvest and to increase the value of the harvested products. With the harvested products, we can:

1. Produce heat during composting phase. Tanks of water are placed in some piles of box tree branches. The temperature of the water rises until 60°C. The heat is produced by the microbiological activity in non-strictly aerobic conditions. Through a big size heat exchanger, the farm and dwelling houses, as well as the BUXOR Company are heated through this original recovery system.
2. Restore the soil after a 3 to 6 months-aged compost. The composted material is used in the same way as in the “Jean Pain” method with an important particularity: *Buxus sempervirens* constitutes 80% of the material. For ages box tree compost is known for its quality, even called “Compost of the kings” by Olivier de Serres. Recent analysis revealed its extraordinary microfauna richness (at least 600 000 microorganisms per ton). Neither fertilisers nor chemicals are needed anymore. If spread on the surface, it is similar to a forest soil with the humus layer. The soil is softer and not compacted, and humidity is regulated. The rooting and assimilation are favored. The BUXOR product is offered for sale for home gardeners, market gardeners, winemakers, etc. The bearing capacity of the soil increases through protection against crushing by heavy machines and it contribute to reduce erosion during heavy rains.
3. Provide nutrient substrate for the breeding of Goldsmith Beetle larvae (*Cetonia aurata*). The idea is replacing food complement for pig breedings by larvae that show exceptional nutritional qualities. First trial results are encouraging and seem to guarantee the food independence of pigs of the farm. In few months, the farm will be free of need of cereals which has significantly affected the budgets in recent years yet.
4. Provide animal litter in the huts where the sows give birth in dried chip. It improves comfort, reduces odors and seems to get rid of parasites.

Conclusion

Thus, from a very unpromising reality for a farm: closed- and arid environment, need for costly grain inputs, Terres Libres and BUXOR Company have created a virtuous loop that provides energy autonomy for warmth, livestock feed, improved conditions in the nursery, new grazing area opening and new resources with derivatives.

In our opinion, this experience seems to be reproducible by other farmers. The materials and production patterns have been tested and validated. Boxwood invasion is a common condition in all the Larzac area and in other regions, invasive woody vegetation settled down since the abandonment of farmland. Moreover, the technical domain we have opened displays a wide range of possibilities in terms of innovation to come, whether in farming practices or in the

habitat needs. EARL Terres Libres and the BUXOR Company will continue to explore new opportunities.

References :

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